

**OBSERVATIONS ON TERRITORIALITY OF
OLIGODRANES MITIS CRESSON (DIPTERA:
BOMBYLIIDAE) ON FLOWERS OF *ERIGERON
NEOMEXICANUS* (ASTERACEAE)¹**

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ABSTRACT: Territoriality and allied behavior exhibited by *Oligodranes mitis* on flower heads of *Erigeron neomexicanus* in southern New Mexico is described and illustrated.

Bombyliidae are well known as visitors to many different flowering plants (Graenicher 1910, Robertson 1928, Grant & Grant 1965) and are principal pollinators of certain species (Moldenke 1976, Schmitt 1981, Plichta, unpubl. data). Published observations on plant-insect relationships concerning Bombyliidae have dealt primarily with floral visitation and pollination ecology (Straw 1963, Moldenke 1976, Schmitt 1981). The present paper concerns territoriality exhibited by *Oligodranes mitis* Cresson on flower heads of *Erigeron neomexicanus* Gray (Asteraceae).

On 6-7 and 13 May 1982, observations were conducted by the author at a site 5 mi [8.0 km] N of Aguirre Springs, Doña Ana Co. in the Organ Mts of southern New Mexico, elevation ca. 5000 ft [1524 m]. Observations were made daily from approximately 1000-1600 h. The prominent floral display of *Erigeron neomexicanus*, combined with a small, dry streambed that ran between two large patches of *Erigeron*, was an ideal collecting site for Bombyliidae. The site is located in the northernmost portion of the Chihuahuan Desert, and is characterized by a lack of vegetation save for sporadic growths of *Salvia*, *Opuntia*, *Erigeron*, and other small flowering annuals. The site is at the eastern base of the Organ Mts and sharply grades into a pinyon-juniper woodland less than a mile away.

While collecting the many bombyliids that frequented the flowering *E. neomexicanus* (e.g., *Pantarbes*, *Geminaria*, *Oligodranes*, *Mythicomyia*, *Apolysis*, *Villa*, *Lepidanthrax* and *Aphoebantus*), it was noted that when disturbed, males of *Oligodranes mitis* would fly from their perches on the *E. neomexicanus* flower heads and return a few seconds later. The time between leaving the flower head and returning varied according to the degree of disturbance; however, males would almost invariably return to the same flower head. This type of behavior is similar to the territorial behavior

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exhibited by species of *Bombylius*. The males of *Bombylius* hover over marked territories and, after being disturbed from their territory, will eventually return to the same territory (Cunningham-van Someren 1979, Evenhuis, unpubl. data). Females of *O. mitis* did not exhibit territoriality but instead moved from flower to flower when disturbed and fed much more frequently.

After alighting, the *Oligodranes* male placed itself on the outer ray petals with its proboscis directed inward toward the disc flowers (Fig. 1). When it fed, it moved forward slightly to probe among the corollas of the disc flowers in search of nectar with its long proboscis. After feeding, the fly would again move backward to the ray petals resuming its original position. Feeding in males was infrequent; they spent most of the time in the resting position described above.

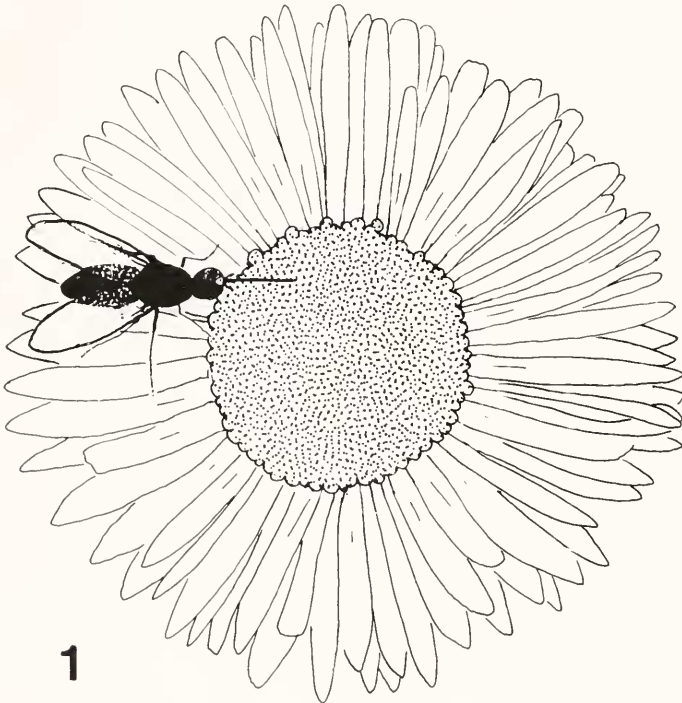


Fig. 1. Resting position of a male *Oligodranes mitis* Cresson on a flower head of *Erigeron neomexicanus* Gray.

Usually only one *Oligodranes* individual (male or female) would occupy a single flower head; however, occasionally more than one fly was found on a single flower (observed in 12 out of 58 cases). As many as 4 individuals of *O. mitis* were observed on the same flower (2 observations). When another individual alighted upon an occupied flower, the original occupant would not attempt to chase the new occupant away but would instead space itself 180° from the other individual (Fig. 2a). This equidistant spacing also held true in cases when there were more than two individuals on the same flower head (i.e., with three individuals, the spacing would be 120° apart, with four it would be 90°).

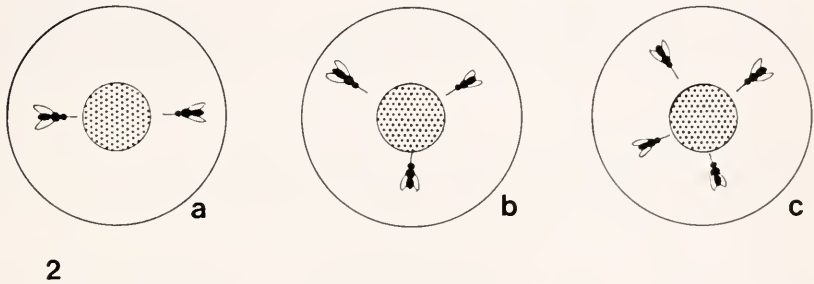


Fig. 2. Spacing of *Oligodranes* on *Erigeron* during multiple occupation. a) ca. 180° spacing with 2 individuals; b) ca. 120° spacing with 3 individuals; c) ca. 90° spacing with 4 individuals.

When viewed from above, movement on the flower head by more than one fly while feeding was always in a clockwise direction. When one fly came within ca. 20° of another fly, one or the other would move away, maintaining the equidistant spacing. During these confrontations, often the larger individual, whether male or female, would remain in its position and the smaller fly would move away (in a clockwise direction). Occasionally, when the smaller one failed to move away as the larger one approached, the larger one, after getting close enough, would kick its middle leg outward to push away the smaller individual. This was the only physical contact observed between individuals on the same flower and was seen three times during the course of these observations.

Captures of other species of *Oligodranes* at this site, other localities in New Mexico, and Arizona, all on various species of *Erigeron*, lead me to conclude that *Erigeron* flowers play an important role in the biologies of adult species of *Oligodranes*, much as other flowers do in the Old World genus *Usia* (DuMerle 1971) [both genera have been recently placed in the subfamily Usiinae (Hull 1973, Hesse 1973)]. Though not observed here,

territoriality exhibited by males of *Oligodranes mitis* presumably is related to courtship and mating as in other genera of Bombyliidae.

LITERATURE CITED

- Cunningham-van Someren, G.R. 1979. Observations on the behavior and feeding of *Bombylius uniformis* Paramonov and *B. flammeus* Bowden (Dipt., Bombyliidae) in Kenya. *Entomol. Mon. Mag.* 114: 107-11.
- DuMerle, P. 1971. Biologie de deux espèces de genre *Usia* Latreille (Diptera: Bombyliidae). *Ann. Soc. Entomol. Fr. (N.S.)* 7: 241-59.
- Grant, V. & K. Grant. 1965. *Flower pollination in the Phlox family*. Columbia Univ. Press, N.Y. 180 p.
- Graenicher, S. 1910. The bee flies (Bombyliidae) and their relations to flowers. *Bull. Wisc. Natl. Hist. Soc.* 8: 91-101.
- Hesse, A.J. 1975. Additions to the South African species of Phthiriinae and Usiinae (Diptera: Bombyliidae) with keys to all known species. *Ann. S. Afr. Mus.* 66: 257-308.
- Hull, F.M. 1973. Bee flies of the world. The genera of the family Bombyliidae. *Bull. U.S. Natl. Mus.* 286: 1-687.
- Moldenke, A.R. 1976. California pollination ecology and vegetation types. *Phytologia* 34: 305-61.
- Robertson, C. 1928. *Flowers and insects*. Science Press, Lancaster, Penn. 221 p.
- Schmitt, J.M. 1981. Pollinator foraging and evolution in flowering plant populations. Univ. Microfilms International, Ann Arbor, Michigan. 73 p.
- Straw, R.M. 1963. Bee fly pollination in *Penstemon ambiguus*. *Ecology* 44: 818-19.

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The Commission hereby gives six months notice of the possible use of its plenary powers in the following cases, published in the *Bulletin of Zoological Nomenclature*, volume 39, part 3, on 30 September 1982, and would welcome comments and advice on them from interested zoologists. Correspondence should be addressed to the Secretary at the above address, if possible within six months of the date of publication of this notice.

Case No.

- 2384 *Nymphula* Schrank, 1802 (Insecta Lepidoptera): proposal to designate a type species.
- 2296 *Hybosorus illigeri* Reiche, 1853 (Insecta, Coleoptera): proposed conservation by use of the plenary powers.
- 2380 *Anthalia* Zetterstedt, 1838 (Insecta, Diptera): request for designation of type species.

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